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Unmanned Combat Air Vehicle completes first flight

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WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The X-45A Unmanned Combat Air Vehicle (UCAV) took to the skies for its first flight May 22. The major advance in aerospace technology occurred as the result of a Defense Advanced Research Projects Agency (DARPA)/U.S. Air Force/Boeing collaboration. The 14-minute flight marked the first step in transforming combat capability for the Air Force of the early 21st century.

Col. Mike Leahy, DARPA Program Manager, spoke during a conference call about the accomplishments Unmanned Air Vehicles (UAVs) achieved in Afghanistan, and called the UCAV "the next step in the evolution of UAVs." Leahy lauded the UCAV as the product of "the best this nation has to offer against the challenges presented by the demands of this revolutionary weapons system."

The X-45A flew at NASA's Dryden Flight Research Center on Edwards Air Force Base, Calif. At 7:26 a.m., the flight began and the aircraft subsequently reached an airspeed of 195 knots and altitude of 7,500 feet.

The successful flight demonstrated the characteristics and basic aspects of aircraft operations; specifically, the command and control link between the aircraft and mission-control station.

Later this year, the team will fly a second X-45A, the red bird, leading to multi-aircraft (pack) flight-test demonstrations next year. Eventually, UCAVs will fly in packs, "searching for enemy anti-aircraft missile launchers and working together to destroy them under the supervision of a human operator, who could be located anywhere in the world," Leahy said.

A vital component of the project was teamwork, and this rapport extended beyond the packs in which the UCAVs will one day fly. A strong partnership across government agencies and industry produced the unique set of technologies that led to this historic flight. Air Force Research Laboratory, headquartered at Wright-Patterson Air Force Base, Ohio, was one of the many agencies directly involved in this landmark flight.

AFRL liaison David Lanman, UAV Focus Area Lead, underscored the importance of partnership, emphasizing that, "The flight was a success due to a strong relationship between DARPA, the Air Force, Boeing and NASA."

"We in AFRL are thrilled to be a partner in the development of this capability and believe it will transform the way we will fight wars in the future," Lanman added.

"The X-45 UCAV demonstrator program is the cornerstone for Boeing's Unmanned Systems organization," said Boeing Program Manager Rich Alldredge. Citing one of the many benefits, Alldredge spoke of UCAV's cost effectiveness, "We expect it not only to be cheaper to acquire, but much cheaper to operate than current generation fighters."

The team's follow-on testing will explore the boundaries of intelligent unmanned combat operations. The summer tests will occur every two to three weeks, phasing into multi-vehicle packages. Beginning in the summer of 2003, into early 2004, demonstrations for weapons delivery will begin. Culminating in 2006, testing will eventually include UCAVs and manned aircraft operating together during an exercise.

The next stage in development is the X-45B. Larger and more capable than its predecessor, the X-45B will incorporate low-observable technologies. The X-45B will be a fieldable prototype aircraft, laying the foundation for an initial operational system towards the end of this decade.

"The vehicles are designed to be able to fly autonomously although it is not an autonomous weapons system," Leahy said. The basic concept for UCAV will be a four-ship pack under the command of a battle

Continued on page 2

Continued from page 1

manager, who will have the situational awareness to command and control the vehicles. In the 2007-2008 time frame, the UCAV will begin to perform its mission, achieving the preemptive destruction of enemy air defense targets.

Leahy concluded, "If we're able to prove the technologies and put them together into an affordable and effective package that matches our vision, there will be a place for this system in the future force structure." @